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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,475	03/05/2004	Singaravelu Elangovan	CER-041113	2474
55162 7590 01/08/2007 CERAMATEC, INC. 2425 SOUTH 900 WEST SALT LAKE CITY, UT 84119			EXAMINER KOPEC, MARK T	
			ART UNIT	PAPER NUMBER
			1751	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/08/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/708,475

Applicant(s)

ELANGOVAN ET AL.

Examiner

Mark Kopec

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-19, 21-26 and 30-72 is/are pending in the application.
- 4a) Of the above claim(s) 16-19, 21-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-72 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

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This action is responsive to applicant's amendment/remarks filed 10/27/06. Claims 16-19, 21-26 and 30-72 are currently pending.

The IDS filed 12/04/06 has been considered. The fee set forth in 37 CFR 1.17(p) will be charged to Deposit account #50-3586.

Applicant's election of Species I is noted. Claims 16-19 and 21-26 are withdrawn from consideration.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 30-72 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

A written description requirement issue generally involves the question of whether the subject matter of a claim is supported by [conforms to] the disclosure of an application as

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filed. If the examiner concludes that the claimed subject matter is not supported [described] in an application as filed, this would result in a rejection of the claim on the ground of a lack of written description under 35 U.S.C. 112, first paragraph or denial of the benefit of the filing date of a previously filed application. If new matter is added to the claims, the examiner should reject the claims under 35 U.S.C. 112, first paragraph - written description requirement. In re Rasmussen, 650 F.2d 1212, 211 USPQ 323 (CCPA 1981). The examiner should still consider the subject matter added to the claim in making rejections based on prior art since the new matter rejection may be overcome by applicant.

The specification as filed to does not provide support for the following added claim terminology:

In claim 30, the terminology "...said electron conducting ceramic phase comprising at least a portion that is not the product of a reaction involving the proton conducting ceramic phase; and wherein the material is substantially gas impermeable when sintered" is not supported by the disclosure as filed. The newly added claim limitations are not supported in the specification through express, implicit, or inherent disclosure.

In claim 51, the terminology "...and wherein the material is substantially gas impermeable when sintered" is not supported by

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the disclosure as filed. The newly added claim limitations are not supported in the specification through express, implicit, or inherent disclosure.

In claim 72, the terminology "...wherein the amount of the electron conducting ceramic phase is sufficient to prevent the formation of carbonate in the presence of carbon dioxide and the formation of hydroxide in the presence of water; and wherein the material is substantially gas impermeable when sintered" is not supported by the disclosure as filed. The newly added claim limitations are not supported in the specification through express, implicit, or inherent disclosure.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 30-72 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Dependent claim 50 fails to recite any referring claim.

The term "substantially gas impermeable" in claims 30, 51 and 72 is a relative term which renders the claim indefinite. The term "substantially gas impermeable" is not defined by the

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claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The prior art rejection over Balachandran is withdrawn in view of applicant's remarks.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 30-71 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuenstler et al (Physical-chemical investigations...).

This rejection is maintained for the reasons set forth in the Rejection mailed 06/07/06 (pages 6-7).

Applicant's arguments filed 10/27/06 have been fully considered but they are not persuasive.

Applicant's discussion of the instant invention at page 11 of the response is noted.

Note that claim 72 is allowed over this reference.

With respect to instant claims 30-50, applicant argues that Kuenstler disclose the electron conducting CeO₂ phase is the reaction product during the process of creating BaCeO₃.

While Kuenstler does not disclose "said electron conducting ceramic phase comprising at least a portion that is not the

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product of a reaction involving the proton conducting ceramic phase", the resultant product would be identical. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

With respect to instant claims 51-71, the examiner respectfully maintains that Kuenstler inherently meets the claimed limitation(s) regarding "forming at least one contiguous path...". Applicant's statement "each phase should have a sufficient volume fraction, generally considered to be 30%, for providing independent proton conducting and electron conducting pathways..." is noted. However, it appears from the instant specification that the formation of in-situ electron conducting phase is sufficient to achieve the desired "contiguous pathways". See, for example, paragraph 0024 of the instant specification.

Claims 30-72 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wallin (5,670,270).

This rejection is maintained for the reasons set forth in the Rejection mailed 06/07/06 (pages 8-10).

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Applicant's arguments filed 10/27/06 have been fully considered but they are not persuasive.

Applicant argues that the "porous solid state" mixture does not result in a gas impermeable material.

Initially, note the above 112 1st and 2nd para rejections over the claim terminology "substantially gas impermeable when sintered".

The examiner respectfully submits that the disclosed interpenetrating network of ionically-conductive material and electronically-conductive material meet the claimed limitations. The claim terminology does not appear to preclude the presence of a porous material. During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." The Federal Circuit's en banc decision in *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) expressly recognized that the USPTO employs the "broadest reasonable interpretation" standard: The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." In re Am.

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Acad. of Sci. Tech. Ctr., 367 F.3d 1359, 1364[, 70 USPQ2d 1827]
(Fed. Cir. 2004).

Note the following new grounds of rejection.

Claims 30, 31, 36, 39-52, 57, 60-72 are rejected under 35
U.S.C. 102(b) as anticipated by Liu et al (5,478,444).

Liu discloses composite ceramic mixed oxygen ion and
electronic conducting materials having high ambipolar activity
which can be fabricated into thin membranes for high efficiency
oxygen separation from air at intermediate temperatures. The
mixed conducting materials have composite non-homogeneous
microstructures of a separate predominantly oxygen ion
conductive phase and a predominantly electronic conductive
phase. Predominantly oxygen ion conducting phases include
bismuth, cerium and thorium oxide based materials and
predominantly electronic conducting phases include at least one
metal, metal oxide of at least one metal, and at least one
perovskite-type electronic conductor material (Abstract).
Suitable oxygen ion conducting metal oxides include those of the
formulation $\text{Bi}_{2-x-y}\text{M}'_x\text{M}_y\text{O}_{3-\delta}$, $\text{Ce}_{2-x-y}\text{M}_x\text{M}_y\text{O}_{2-\delta}$, and $\text{Th}_{2-x-y}\text{M}'_x\text{M}_y\text{O}_{2-\delta}$ wherein M' is a stabilizer selected from the group
consisting of Er, Y, Tm, Yb, Lu, Nd, Sm, Dy, Zr, Hf, Th, Ta, Nb,
Pb, Sn, In, and mixtures thereof; M is a dopant selected from
the group consisting of Cu, Ti, V, Cr, Mn, Fe, Co, Ni, and

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mixtures thereof; x is a positive number of about 0.30 to about 0.30; y is a number of 0 to about 0.10; and δ is a number to satisfy valence requirements. In preferred embodiments, M' is selected from the group consisting of Er, Y, Dy and mixtures thereof; and M is selected from the group consisting of Cu, Ti, Fe and mixtures thereof (Col 5, lines 37-49). The electronic conducting phase can be at least one metal selected from Ag, Ir, Pd, Pt and Au; an electronically conductive metal oxide of CrO_2 , IrO_2 , MnO_2 , MoO_2 , OsO_2 , ReO_2 , RhO_2 , RuO_2 , WO_2 , $Bi_{2-y'}M_{y'}O_{3-\delta}$, wherein y' is a numeral of about 0.40 to 2.0 and M and δ have the meanings defined above, and mixtures thereof; or an electronically conductive perovskite material selected from $La_{1-z}Sr_zCoO_{3-\delta}$, $La_{1-z}Sr_zMnO_{3-\delta}$, $La_{1-z}Sr_zMn_{1-w}CoWO_{3-\delta}$, $La_{1-z}Sr_zCo_{1-w}FeWO_{3-\delta}$, $SrFe_{1-z}Co_zO_{3-\delta}$, $VTiO_3$, $LaTiO_3$, $SrFeO_3$, $SrRuO_3$, $LaNi_{1-z}Co_2O_{3-\delta}$, derivative forms and mixtures thereof wherein z is a positive numeral of about 0.01 to about 0.8; w is a positive numeral of about 0.01 to about 0.8; and δ is a number of 0 to a positive or negative number of about 0.3 to satisfy valence requirements (Col 5, lines 50-65). The reference specifically or inherently meets each of the claimed limitations.

The reference is anticipatory.

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Where the information is submitted during this period with a fee as set forth in 37 CFR 1.17(p), the examiner may use the information submitted, and make the next Office action final whether or not the claims have been amended, provided that no other new ground of rejection which was not necessitated by amendment to the claims is introduced by the examiner. See MPEP § 706.07(a).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Kopec whose telephone number is (571) 272-1319. The examiner

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can normally be reached on Monday - Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas McGinty can be reached on (571) 272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Mark Kopec
Primary Examiner
Art Unit 1751

MK

January 3, 2007